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User Guide to 1996 Census Income Data

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July 2000

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Statistics Canada
Income Statistics Division

User Guide to 1996 Census Income Data

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

ABSTRACT

This report explains the concept of income and provides definitions of the various sources of income and derived income variables. The report also documents the various aspects of the census that can have an impact on census income estimates. These include the actual income questions asked in the 1996 Census along with instructions to respondents. The report explains, briefly, the methodology adopted to capture the response information, process and edit it for inconsistencies and imputation for non-response. The impact of these operations on income data is described. The report includes summary results of extensive qualitative evaluation of Census income estimates when compared with other sources such as the National Accounts and the Survey of Consumer Finances. Also included is a detailed comparison of income-related content and coverage in the census since 1971.

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I. Introduction

The census of Canada yields the most comprehensive database on the characteristics of Canadians, their families and their households. The information it collects ranges from sex and age of individuals to their ethnic origin, education, occupation and sources of income, and to their family and household characteristics.

A national census is a very large project consisting of various phases, each one of which is complex and consumes a large amount both of time and resources. The desired information is sought through a set of questions established after detailed consultations and tests. The questionnaires are collected in a specific manner by trained enumerators. Inconsistencies and errors in the respondent provided data are identified and corrected and missing information is imputed. The final data reside on a computer database. Subsequently, selected data are analyzed and published in a series of reports, data publications or in electronic format.

One of the important characteristics on which the 1996 Census asked questions was the sources of income of Canadians. For many purposes, information on the income of individuals and families is deemed essential. Income is the single most useful indicator of the economic well-being of Canadians. Most socio-economic analysis (of such factors as ethnicity and education), the evaluation of many programs and policies (for example, old age security and equality of opportunity), many business decisions (such as opening of new plants and branches or retail outlets), and almost all welfare research (for example, housing affordability and changes in low income families) require relevant income data.

While a substantial amount of income statistics derived from the census are published in various forms, a very large number of users - individuals, research institutions, businesses, various levels of government, etc. - request income data tailored to their own needs. In this respect, knowledge of the concepts underlying census variables and their limitations and quality would help users both to appreciate the available published data and to design suitable specifications for their own needs. This document, the **User Guide to 1996 Census Income Data**, is produced to serve as a guide to users of census income data.

Section II explains the concept of income and provides definitions of various sources of income and derived income variables. Included in that section are brief definitions of a few important variables which are often used in conjunction with income. Section III describes the collection methods and reproduces the income questions on the 1996 Census questionnaire along with relevant instructions from the Respondent's Guide. Section IV explains the processing operations undertaken in regional and head offices. Section V describes the various phases of edit and imputation and provides an overview of steps followed to prepare income data for public release. Section VI includes brief notes on the types of errors that can occur during the census cycle, refers to the studies undertaken to quantify these errors, and provides information on the quality of income data. Section VII provides information on general changes to the census content and coverage since the 1991 Census and a detailed comparison of income-related content and coverage in the census since 1971. Section VIII lists the various products on income from the 1996 Census and other income related products from the Income Statistics Division.

II. Concepts and Definitions

The **1996 Census Dictionary** (Catalogue No. 92-351E) contains detailed definitions of census terms, variables and concepts. Users should refer to the 1996 Census Dictionary for full definitions and additional remarks related to any concepts and definitions not found in this chapter.

1. Concept of Income

A mention of income without any qualification begs the question: 'What is income?' When asked about his/her income, a working individual will most likely state his/her wages from work or profits from self-employment in a business activity, while a non-working or retired person will likely give his/her income from investments or pension benefits, etc. In some cases, government transfer payments, such as unemployment insurance benefits or child tax benefits will be included in the answer.

For the purposes of the census, income includes all money income, before taxes, received by individuals 15 years and over from employment, investments, government transfer payments and other miscellaneous sources during the calendar year preceding the census. It excludes the value of income "in kind" and lump-sum payments. For detailed definitions of income sources and total income, see Section 3.

Income is usually generated over time. It is generally stated as an amount per hour, week, month or year. It is, therefore, also important to specify, in addition to the constituents of income, the time period for which the respondent is to report his/her income. Income data from the 1996 census relate to calendar year 1995.

In addition to the constituents of income and the period covered, it is also important to specify the 'income unit', (an individual, family, etc.) which received income. The census collects income information from all individuals 15 years and over in a sample of households. From other information on the questionnaire, incomes for other units such as families, households or spouses can easily be calculated.

2. Components of Income

Income stems from many sources. These sources can be grouped broadly as follows:

(a) Employment Income/Earnings

The primary source of income is employment or work, which may be undertaken either for others or for oneself. The monetary return to the employees is generally called a wage or a salary, and the return to those working for themselves is called income from self-employment (profit/loss). The two components together are generally referred to as 'employment income' or 'earnings'.

(b) Investment Income

The combined use of labour and capital results in self-employment income, while labour alone usually entitles one to a wage or salary. Use of capital alone also produces income, referred to as investment income, in the form of interest, dividends, rent, etc.

(c) Transfer Payments

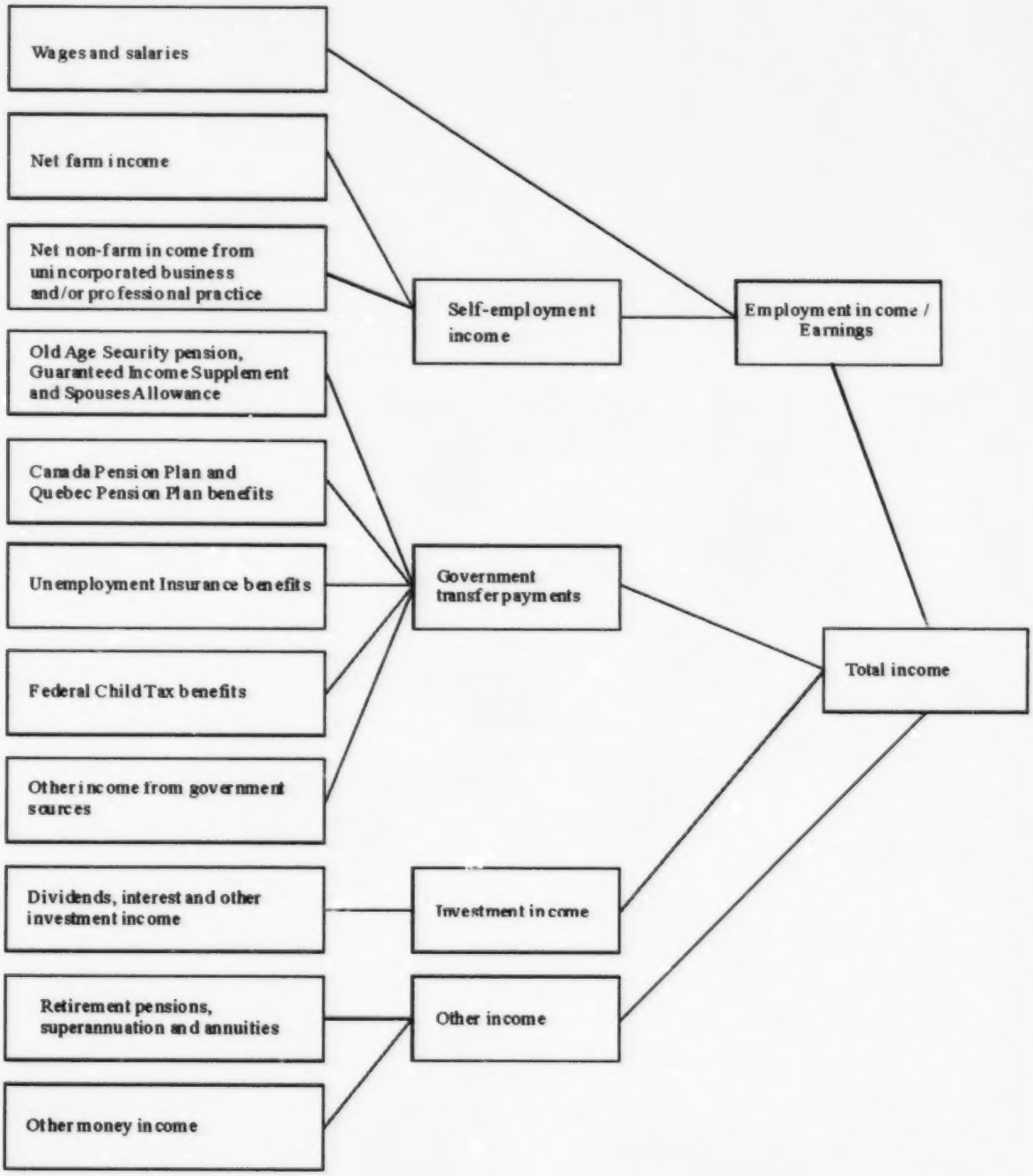
A very common source of income among Canadians is government transfer payments. These payments may be universal (like the Old Age Security pension), social insurance (such as Canada/Quebec Pension Plan benefits) or are income-tested (for example, child tax credits, guaranteed income supplements) and needs-tested (such as mothers' allowance).

(d) Other Sources

Finally, income is also received from miscellaneous sources such as retirement pensions and alimony.

The above broad framework is depicted in Figure 1. The items in the figure are based on the primary income data from the 1996 Census database. Detailed definitions of sources of income and related variables are presented in Section 3.

Figure 1. Components of Income in 1995


Wages and salaries
Net farm income
Net non-farm income from unincorporated business and/or professional practice
Old Age Security pension, Guaranteed Income Supplement and Spouses Allowance
Canada Pension Plan and Quebec Pension Plan benefits
Unemployment Insurance benefits
Federal Child Tax benefits
Other income from government sources
Dividends, interest and other investment income
Retirement pensions, superannuation and annuities
Other money income
Self-employment income
Government transfer payments
Investment income
Other income
Employment income / Earnings
Total income

3. Definitions

(1) Sources Of Income

(a) Total wages and salaries

Refers to gross wages and salaries before deductions for such items as income tax, pensions and unemployment insurance. Included in this source are military pay and allowances, tips, commissions and cash bonuses, as well as all types of casual earnings during calendar year 1995. The value of taxable allowances and benefits provided by employers, such as free lodging and free automobile use, is excluded.

Persons doing casual work such as baby-sitting in their own homes or selling and delivering cosmetics or newspapers were asked to report their net income in the non-farm self-employment category.

(b) Net non-farm income from unincorporated business professional practice, etc.

Refers to net income (gross receipts minus expenses of operation such as wages, rents and depreciation) received during calendar year 1995 from the respondent's non-farm unincorporated business or professional practice. In the case of partnerships, only the respondent's share was reported. Also included is net income from persons babysitting in their own homes, self-employed fishermen, hunters and trappers, operators of direct distributorships such as those selling and delivering cosmetics, net income from roomers and boarders as well as from freelance activities of artists, writers, music teachers, hairdressers, dressmakers, etc.

(c) Net farm income

Refers to net income (gross receipts from farm sales minus depreciation and cost of operation) received during calendar year 1995 from the operation of a farm, either on own account or in partnership. In the case of partnerships, only the respondent's share of income was reported. Also included are cash advances, dividends from cooperatives, gross insurance proceeds and all rebates and farm-support payments to farmers from federal, provincial and regional agricultural programs (e.g., milk subsidies and marketing board payments). However, the value of income "in kind", such as agricultural products produced and consumed on the farm, is excluded.

Agricultural operations produce at least one of the following items intended for sale: field crops, vegetables, tree fruits, or seed; greenhouse and nursery products; poultry and livestock; animal products such as eggs, milk, meat, furs or wool; other agricultural products such as honey, mushrooms, sod, Christmas trees or maple syrup products.

(d) Old Age Security Pension, Guaranteed Income Supplement and Spouse's Allowance

Refers to Old Age Security pensions and Guaranteed Income Supplements paid to persons 65 years of age and over, and spouses' allowances paid to 60- to 64-year-old spouses of old age security recipients or widow(er)s by only the federal government during the calendar year 1995. (Provincial income supplements to GIS recipients are included in "other income from government sources").

(e) Benefits from Canada/Quebec Pension Plan

Refers to benefits received during calendar year 1995 from the Canada or Quebec Pension Plan (e.g., retirement pensions, survivors' and orphans' benefits and disability pensions). Does not include lump-sum death benefits. Retirement pensions of civil servants, RCMP and military personnel are reported separately under "Retirement Pensions".

(f) Benefits from Unemployment Insurance

Refers to total Unemployment Insurance benefits received during calendar year 1995, before income tax deductions. It includes benefits for unemployment, sickness, maternity, paternity, adoption, work sharing, retraining and benefits to self-employed fishermen received under the federal Unemployment Insurance Program.

(g) Federal Child Tax Benefits

Refers to federal Child Tax benefits paid during calendar year 1995 to parents with dependent children under 18 years of age. No information was collected from respondents on Child Tax benefits. Instead, these were calculated in the course of processing and assigned, where applicable, to one of the parents in the census family on the basis of information on children in the family and the family income. These calculations took into account the variations in the benefit rates in Quebec and Alberta, as well as the supplementary family allowances in Quebec.

(h) Other income from government sources

Refers to all transfer payments, excluding those covered as a separate income source (federal Child Tax benefits, Old Age Security pensions and Guaranteed Income Supplements, Canada or Quebec Pension Plan benefits and Unemployment Insurance benefits) received from federal, provincial or municipal programs during calendar year 1995. This source includes social assistance payments received by persons in need, such as mothers with dependent children, persons temporarily or permanently unable to work, elderly individuals, the blind and the disabled. Included are provincial income supplement payments to the elderly and provincial payments to the elderly to help offset accommodation costs. Also included are other transfer payments such as payments received from training programs sponsored by the federal and provincial governments, TAGS payments for employees in the fishing industry, regular payments from provincial automobile insurance plans, veterans' pensions, war veterans' allowance, pensions to widows and dependants of veterans, and workers' compensation. Additionally, any amounts received in 1995 for refundable provincial tax credits and the federal goods and services tax credits are included.

(i) Dividends, interest on bonds, deposits and savings certificates, and other investment income

Refers to interest received during calendar year 1995 from deposits in banks, trust companies, cooperatives, credit unions, caisses populaires, etc., as well as interest on savings certificates, bonds and debentures and all dividends from both Canadian and foreign corporate stocks and mutual funds. Also included is other investment income from either Canadian or foreign sources such as net rents from real estate, mortgage and loan interest received, regular income from an estate or trust fund, and interest from insurance policies.

(j) Retirement pensions, superannuation and annuities, including those from RRSPs and RRIFs

Refers to all regular income received during calendar year 1995 as the result of having been a member of a pension plan of one or more employers. It includes payments received from all annuities, including payments from a matured Registered Retirement Savings Plan (RRSP) in the form of a life annuity, a fixed term annuity, a Registered Retirement Income Fund (RRIF) or an income-averaging annuity contract; pensions paid to widow(er)s or other relatives of deceased pensioners; pensions of retired civil servants, Armed Forces personnel and Royal Canadian Mounted Police (RCMP) officers; annuity payments received from the Canadian Government Annuities Fund, an insurance company, etc. Does not include lump-sum death benefits, lump-sum benefits or withdrawals from a pension plan or RRSP, or refunds of overcontributions.

(k) Other money income

Refers to regular cash income received during calendar year 1995 and not reported in any of the other nine sources listed on the questionnaire, e.g., alimony, child support, periodic support from other persons not in the household, income from abroad (excluding dividends and interest), non-refundable scholarships and bursaries, severance pay, royalties, wage-loss replacement benefits and strike pay.

(2) Total Income

Total income is the sum of amounts received during 1995 by an income recipient from the 11 sources listed and defined above. The amounts against the various sources are actual dollars reported or assigned. Although the census questionnaire includes a question on 'total income', that information was used only for control purposes. The final variable 'total income' is derived by summing all the sources of income after those sources have been processed through edit and imputation.

It is important to note that the census income concept does not include gambling gains and losses, money inherited during the year in a lump sum, capital gains or losses, receipts from the sale of property or personal belongings, income tax refunds, loans received, loans repaid to an individual as the lender, lump-sum settlements of insurance policies, rebates of property and other taxes, and refunds of pension contributions were excluded as well as all income "in kind" such as free meals, living accommodation, or agricultural products produced and consumed on the farm.

(3) Derived Income Variables

From the sources of income (and sometimes in combination with other related variables), a number of other income variables are derived and included in the census database. The most important of these variables is, of course, 'total income', as described above. Others are briefly explained below.

(a) Employment Income/Earnings

Employment income, also known as earnings, consists of total income received during 1995 as wages and salaries, net income from non-farm self-employment and/or net farm income.

(b) Census Family Income

A census family consists of a couple, married or living common-law, with or without never-married sons and/or daughters of either or both spouses, or a lone parent with one or more never-married sons and/or daughters. The total income of a census family is the sum of the total incomes of all members of that family.

(c) Economic Family Income

An economic family consists of all persons related by blood, marriage or adoption and living in the same household. The total income of an economic family is the sum of the total incomes of all members of that family.

(d) Household Income

A household consists of all persons, irrespective of their interrelationship, living in a dwelling. The total income of a household is the sum of the total incomes of all members of that household.

(e) Income Status

This variable indicates the status of a family unit (economic family or unattached individual) in relation to Statistics Canada's low income cut-offs (LICOs), that is, whether the total income of a family unit is above or below the applicable cut-off point. Statistics Canada introduced these low income cut-offs in 1968 based on 1961 Census income data and on 1959 family expenditure patterns. The expenditure data indicated that, on average, Canadian families spent about 50% of their income on food, shelter and clothing (components of expenditure that fit broadly into the "basic necessities" category). It was arbitrarily assumed that a family which had to spend 70% or more of its income on these basic essentials would be left with very little discretionary income and would, therefore, be in "straitened circumstances". With this assumption, low income cut-off points were set for seven different sizes of families.

Subsequent to these initial cut-offs, revised low income cut-offs were established based on national family expenditure data from 1969, 1978, 1986 and 1992. These data indicated that Canadian families spent, on average, 42% in 1969, 38.5% in 1978, 36.2% in 1986 and 34.7% in 1992 of their income on basic necessities. By adding the original difference of 20 percentage points to the basic level of expenditure on necessities, new low income cut-offs were set at income levels differentiated by family size and degree of urbanization. In the intervening periods, these cut-offs have been updated yearly by changes in the consumer price index.

Table 1 shows the 1995 cut-offs.

Table 1. Low Income Cut-offs for Economic Families and Unattached Individuals, 1995

	Size of area of residence				
Family size	500,000 or more	100,000 to 499,999	30,000 to 99,999	Small urban regions	Rural (farm and non-farm)
1	16,874	14,473	14,372	13,373	11,661
2	21,092	18,091	17,965	16,716	14,576
3	26,232	22,500	22,343	20,790	18,129
4	31,753	27,235	27,046	25,167	21,944
5	35,494	30,445	30,233	28,132	24,530
6	39,236	33,654	33,420	31,096	27,116
7 or more	42,978	36,864	36,607	34,061	29,702

Users should note the following points:

(i) Given the widespread misunderstanding concerning the nature of the cut-offs, it is useful to spell out unambiguously what they are and what they are not. As will be apparent from the above brief description, the cut-offs are not poverty lines and should not be so interpreted. The setting of poverty lines necessarily involves a value judgement as to the level of minimum income below which an individual or family would generally be regarded as "poor". No such judgement has been attempted in constructing the low income cut-offs. Rather, these cut-offs were designed in response to the need to quantify the numbers and characteristics of individuals and families falling into the lowest income category - defined in relative terms, taking into account current overall levels of living. These cut-offs do not take into account a number of important factors that could impact an individual's or family's standard of living such as wealth (e.g. home ownership and mortgage indebtedness), access to subsidized goods and services or future earning potential.

(ii) The concept of LICOs applies to economic families and unattached individuals. The economic family concept is broader than the census family concept. However, since all members of an economic family share a common income status, it is possible to produce low-income statistics for census families or the population in private households.

(iii) Annual low income statistics are published from the data collected in the Survey of Consumer Finances. It may be pointed out that the census and the Survey differ slightly when applying the "Size of Area" or "Degree of Urbanization" classification to derive incidence of low income. However, the overall impact of this difference is negligible.

(iv) The low income cut-offs are based on certain expenditure-income patterns that were not available from survey data for the entire population. For this reason, the population resident in the Yukon and Northwest Territories and on Indian reserves is excluded.

To summarize, Statistics Canada's low income cut-offs identify the lowest income groups, taking into account family size and area of residence classification.

(4) Related Variables

The census database allows users to cross-classify income by a host of population, family and household characteristics. For ease of reference, the more important census variables related to income are listed below. For definitions, users should consult the 1996 Census Dictionary, relevant census guides and other documents.

(a) Demographic Variables

These include such basic variables as age, sex, marital status, and family relationship.

(b) Ethno-cultural Variables

These include mother tongue, language, visible minority population group, immigration and citizenship, etc.

(c) Economic Variables

These include education, weeks worked, class of worker, occupation, etc.

(d) Family/Household Variables

Census data can be produced for individuals, families or households. When income is being analyzed at the family or household level, it is possible to relate it to individual characteristics by specifying a particular individual (e.g., a wife) in the family or household (e.g., the first person). Family and household variables, often used in conjunction with income, include number of persons, number of children (of various ages), number of earners or income recipients, family structure, household type, family or household composition, etc.

(e) Geographic Variables

Statistics Canada uses a detailed geographic structure that makes it possible to obtain information for many different geographical areas. Data from the 1996 Census are available for numerous standard geographic areas, as well as for non-standard or user-defined areas. Census income data are disseminated for a number of standard geographic areas as follows:

(i) Legislative/administrative areas are defined, with a few exceptions, by Canadian federal and provincial statutes. These include provinces and territories, federal electoral districts (FEDs), census divisions (CDs), census subdivisions (CSDs) and subprovincial regions (SPRs).

(ii) **Statistical areas** are defined by Statistics Canada as part of the spatial frame used to collect and disseminate census data. Among others, these include census metropolitan areas (CMAs), census agglomerations (CAs), census tracts (CTs) and urban/rural areas.

Other geographical units of a quasi-standard nature are the **unincorporated place (UP), township, range and meridian,** and **forward sortation area** (based upon postal code). For a complete description of geographical terms, concepts and areas, consult the geography section of the **1996 Census Dictionary**.

(5) Most-used Income Statistics

Users of census income and other data have, to a large extent, total flexibility to define the statistics required by them. The following are some of the statistics that are more commonly used:

(a) Income Size Distributions

Although census income variables show the actual dollar values in the database, these are normally grouped into a few categories to classify the income units by income size groups. It is often useful to obtain both numeric and percentage distributions. The number of feasible groups would depend on several factors. It should, however, be kept in mind that too detailed a distribution would be subject to large sampling errors.

(b) Average Income

Average income is defined as the weighted mean total income of a group, and is calculated from unrounded data by dividing the aggregate income of the group by the number of units in that group.

While this is the standard definition of an average, it should be noted that **average income (total income or income from a component) of individuals is always derived by dividing the aggregate income by the number of recipients (of total income or income from a component).** The results of most analysis based on averages that include individuals without income could be quite misleading.

However, **the average incomes of non-family persons, families and households are always calculated by dividing the aggregate income by the number of units, whether or not they had any income**. Although all households, families and non-family persons are expected to have income during the reference period, there are some minor exceptions. It is possible for a family or a non-family person to have subsisted without income by reducing past savings or by going into debt. In other cases, zero-income situations result from changes in family composition, recent immigration, etc. Some of the families not reporting income may have either been newly formed or undergone a change in family composition through marriage, divorce or widowhood. Most of the families with female reference persons without income may fall into this category. The majority of other families without any income may in fact be families that recently migrated to Canada and were instructed not to report income received prior to arrival in Canada. Similar reasons apply to most non-family persons without income. On the whole, the numbers of such cases of zero income families and non-family persons are extremely small.

(c) Standard Error of Average Income

Users may wish to obtain standard errors for the average incomes produced for them. This statistic is an estimate of the error introduced into these data by the fact that they are collected only from a one-in-five random sample of households. There is a 95% probability that the true average income of a group (the value that would have been obtained had sampling

not been used) lies within plus or minus two standard errors, and there is a 99% probability that the true average lies within plus or minus three standard errors. The estimated standard error does not include the effects of certain types of response error, or systematic or coverage errors.

(d) Median Income

Median income of a specified group is defined as that amount which divides its income size distribution into two halves, that is, the incomes of the first half are below the median, while those of the second half are above the median. The organization of the census database is such that it does not lend itself to easy calculation of true medians. Therefore, estimates of median income from census data are derived from grouped data. For highly skewed distributions, especially for small groups of population, the median is generally a better measure of central tendency than the mean.

(e) Incidence and Composition of Income

The presence of actual dollars allows users to produce aggregate amounts of income from various sources which, in turn, can be used to obtain and analyze the income composition of various groups. Similarly, it is possible to generate from the census database the incidence of various sources of income among individuals, families and households.

(f) Major Source of Income

It is possible to obtain a distribution of individuals, families or households by their major source of income. This variable is an indicator of the income component, which constitutes the largest proportion of the total income of an income unit. Different combinations of income sources can be used to derive this classification. For example, income sources can be combined into five components, as follows: wages and salaries, self-employment (farm and non-farm) income, government transfer payments, investment income and other income (retirement pensions and other money income). The absolute values for these components are compared and the component with the largest absolute value is designated as the major source of income.

(g) Incidence of Low Income

The incidence of low income is defined as the proportion or percentage of economic families or unattached individuals in a given classification below the low income cut-off. Since all members of an economic family share a common status, incidence of low income is also calculated for the population in private households.

III. Data Collection and Coverage

This section is divided in two parts. The first part provides general information on the coverage and collection aspects of the census of population. The second part describes the income content and provides a copy of the income questions on the 1996 Census questionnaire and the related instructions included on each income source in the Guide which accompanies the questionnaire.

1. Coverage and Collection - General

For the 1996 Census, information was collected from more than 11 million dwellings both in Canada and temporarily outside Canada on Census Day. Data were collected on **every Canadian citizen (by birth and naturalization), landed immigrant and non-permanent resident (together with family members who live with them in Canada) alive at midnight between May 13 and May 14, 1996. Newborn were to be included if they were born before midnight on May 13.** The data collection process consisted of drop-off and retrieval of approximately 11,500,000 questionnaires. All questionnaires, once received by the field staff, were checked for completion. This phase employed approximately 38,000 persons in a variety of tasks, from mapping to post-censal activities.

Two **collection methods** were used for the 1996 Census: **self-enumeration** and **canvasser enumeration (interview)**. In self-enumeration areas, a questionnaire (Form 2A or Form 2B) was dropped off at approximately 98% of all households before Census Day (May 14, 1996). A member of the household was to complete the questionnaire on Census Day and mail it back in a pre-addressed envelope. In 1996, a test was conducted in part of Ontario where the questionnaire was mailed in/mailed back. Instead of being directed to a census representative, as in the rest of the country, they were forwarded to the centralized edit district office. This method was called Centralized Edit.

In canvasser areas, census representatives completed a long form questionnaire (Form 2D) for each household by interview. In 1996, roughly 2% of households were enumerated by canvassers. This method was used to enumerate households in remote or northern areas and on most Indian reserves where irregular mail service makes mail-back impractical. Some of the remote areas were enumerated as early as March 1996. This method was also used in the town centres of large urban areas, where residents are more difficult to enumerate.

2. Coverage and Collection - Income

The resources spent on a modern census are so large that, to ensure maximum benefit from such a huge investment, the census usually collects more than the basic demographic data. At the same time, governments are sensitive to the issue of response burden. Canada, like some countries, has adopted an approach that attempts to meet the dual objective of efficient use of resources and lower response burden.

This approach consists of making use of two basic forms to collect information, a short form (Form 2A) and a long form (Form 2B). The short form contains questions on name, relationship to Person 1, date of birth, sex, legal marital status, common-law status and first language learned in childhood. The answers to these questions provide the basic data on the population characteristics of the nation. In 1996, four out of five households in Canada received this short questionnaire.

The long form, in addition to including the basic questions used on the short form, asks questions on visible minority population group, immigration, education, language, mobility, labour force activity, industry, occupation and income. Thus, the answers to these questions provide a social and economic portrait of Canada at the time of the census. This long form was distributed to a 20 percent sample, or one in five households, in 1996.

The income question consisted of 10 questions on sources of income and a question on total income. Each question was addressed to individuals 15 years and over in the sampled households. Income information was not collected from individuals under 15 years of age, institutional residents, and recent immigrants who entered Canada between January 1 and May 14, 1996.

The respondents were asked to provide an amount against the sources from which they received an income during the calendar year 1995. Variations of Form 2B (Forms 2C, 2D and 3) were used for certain segments of the population. For example, Form 2C was given to Canadians abroad, while Form 2D was used in canvasser areas. However, it is sufficient to know that the income questions on these forms solicited the same information as those on the 2B questionnaire.

A facsimile of the 1996 Census income question is reproduced in Figure 2.

Although there are 10 sources of income listed on the questionnaire, it is important to advise the respondents about the components of each source. To this end, a Guide is produced for respondents, which explains each question on the Form 2B. This Guide is included in the drop-off package for each household in the sample. The portion of the Guide dealing with income questions is reproduced in Figure 3.

Figure 2. 1996 Census Questionnaire: Income Question

INCOME IN 1995

47. During the year ending December 31, 1995, did this person receive any income from the sources listed below?

- ***Answer "Yes" or "No"*** *for all sources.*
- *If "Yes", also* ***enter the amount****; in case of a loss, also mark "Loss".*
- *Do* ***not*** *include Child Tax Benefit.*

Remember,

	73.	74.
PAID EMPLOYMENT:		
(a) *Total* **wages** and **salaries**, *including commissions, bonuses, tips, etc., before any deductions*	Dollars Cents 01 ◯ Yes ▶ 02 ◯ No	Dollars Cents 01 ◯ Yes ▶ 02 ◯ No
SELF-EMPLOYMENT:		
(b) **Net farm income** *(gross receipts minus expenses), including grants and subsidies under farm-support programs, marketing board payments, gross insurance proceeds*	03 ◯ Yes ▶ 05 ◯ No 04 ◯ Loss	03 ◯ Yes ▶ 05 ◯ No 04 ◯ Loss
(c) **Net non-farm income** from **unincorporated business, professional practice**, *etc. (gross receipts minus expenses)*	06 ◯ Yes ▶ 08 ◯ No 07 ◯ Loss	06 ◯ Yes ▶ 08 ◯ No 07 ◯ Loss
INCOME FROM GOVERNMENT:		
(d) **Old Age Security Pension, Guaranteed Income Supplement** and **Spouse's Allowance** *from federal government only (provincial income supplements should be reported in (g))*	09 ◯ Yes ▶ 10 ◯ No	09 ◯ Yes ▶ 10 ◯ No
(e) Benefits from **Canada** or **Quebec Pension Plan**	11 ◯ Yes ▶ 12 ◯ No	11 ◯ Yes ▶ 12 ◯ No
(f) Benefits from **Unemployment Insurance** *(total benefits before tax deductions)*	13 ◯ Yes ▶ 14 ◯ No	13 ◯ Yes ▶ 14 ◯ No
(g) **Other income** from **government sources**, *such as provincial income supplements and grants, refunds of GST, provincial tax credits, workers' compensation veterans' pensions, welfare payments (Do* ***not*** *include Child Tax Benefit.)*	15 ◯ Yes ▶ 16 ◯ No	15 ◯ Yes ▶ 16 ◯ No
OTHER INCOME:		
(h) **Dividends, interest** on bonds, deposits and savings certificates and **other investment income**, *such as net rents from real estate, interest from mortgages*	17 ◯ Yes ▶ 19 ◯ No 18 ◯ Loss	17 ◯ Yes ▶ 19 ◯ No 18 ◯ Loss
(i) **Retirement pensions, superannuation** and **annuities**, *including those from RRSPs and RRIFs*	20 ◯ Yes ▶ 21 ◯ No	20 ◯ Yes ▶ 21 ◯ No
(j) **Other money income**, *such as alimony, child support, scholarships*	22 ◯ Yes ▶ 23 ◯ No	22 ◯ Yes ▶ 23 ◯ No
TOTAL INCOME FROM ALL OF THE ABOVE SOURCES	24 ◯ Yes ▶ 26 ◯ No 25 ◯ Loss	24 ◯ Yes ▶ 26 ◯ No 25 ◯ Loss

Figure 3. 1996 Census Guide: Income Questions

QUESTION 47 – Income in 1995

The census is the only source of detailed income statistics for all people in Canada, their families and households. Income tax records neither cover all people nor do they provide some important information on the characteristics of persons with income.
Governments use census income data to develop income support programs and social services, such as Old Age Security Pension, provincial income supplements, social assistance and welfare payments. They also use census income data to ensure that programs which supplement family incomes do so efficiently and to identify specific geographic areas in need of assistance.
Businesses, large and small, use these data to market products, to locate stores near consumers, and to develop new products and services.
NO ONE, including courts or other government departments, can get personal income or other information about you from the census. All your answers are kept confidential. This is the law.

GENERAL INSTRUCTIONS

All persons 15 years of age and over, whether or not they worked in 1995, should complete Question 47.
Report annual income received from January 1, 1995 to December 31, 1995 for each of the sources in parts (a) to (j) and for the total income in Question 47.
If you are not sure of the exact amount for a source, give your best estimate.
If necessary, consult your 1995 income tax return and information slips. For persons who had no income from any source in 1995, mark **No** in parts (a) to (j) and in total income.
In the case of a **loss** in parts (b), (c) and (h) and in total income, mark **Yes**, report the amount, and also mark **Loss**.
Report income obtained from outside Canada in Canadian dollars.

PAID EMPLOYMENT

Part (a) – Total wages and salaries
Report in part (a) the total amount of wages and salaries received in 1995.
Include:
• total wages and salaries from all jobs **before** deductions for income tax, pensions, etc. (do not report only take-home pay);
• commissions, cash bonuses, tips and casual earnings;
• military pay and allowances.
Do not include:
• the value of free board and lodging, free automobile use and other taxable allowances and benefits.
Report retiring allowances, severance pay, wage loss replacement benefits and employer or union supplementary unemployment benefits in part (j).
If using T4 slips to answer part (a), report the amount in Box 14 minus the amounts in Boxes 30 to 40.

SELF-EMPLOYMENT INCOME

Part (b) – Net farm income

Persons who operated an agricultural operation in 1995, alone or in partnership, should report net farm income (gross receipts minus operating expenses such as wages, rents or depreciation) in part (b).

In the case of a partnership, report only this person's share of net income.

Agricultural operations produce at least one of the following items intended for sale:

- field crops, tree fruits, vegetables or seed;
- poultry or livestock;
- animal products such as eggs, milk, meat, furs or wool;
- greenhouse or nursery products;
- other agricultural products such as honey, mushrooms, sod, Christmas trees or maple syrup products.

Include:

- cash advances in gross receipts received in 1995;
- all rebates and farm-support payments from federal, provincial and regional agricultural programs such as dairy or milk subsidies or marketing board payments;
- dividends received from co-operatives;
- gross insurance proceeds such as payments from Gross Revenue Insurance Program (GRIP).

Do not include:

- the value of agricultural products produced and consumed on the farm or traded for goods.

Report income from incorporated farms in part (a), Total **wages** and **salaries** and /or in part (h), **Dividends, interest** on bonds, deposits and savings certificates and **other investment income**.

For persons who rented out their farms, report the net rent in part (h).

Part (c) – Net non-farm income from unincorporated business, professional practice, etc.

Who should mark "Yes" in part (c):

- persons who owned and operated a non-farm, unincorporated business or professional practice in 1995, alone or in partnership, including:
- self-employed fishermen, trappers and hunters;
- persons doing casual work such as baby-sitting in their own home, or selling and delivering cosmetics or newspapers;
- persons doing freelance activities, such as artists, writers or music teachers;
- persons who received income from provision of room and board to non-relatives.

Report net income (gross receipts minus operating expenses such as wages, rents or depreciation). Do not subtract personal deductions such as income tax and pension contributions.

In the case of a partnership, report only this person's share of net income.

Include:

- net income from roomers and boarders;
- NCARP payments for self-employed fishermen.

Report income from incorporated businesses in part (a), Total **wages** and **salaries** and /or in part (h), **Dividends, interest** on bonds, deposits and savings certificates and **other investment income**.

INCOME FROM GOVERNMENT

Part (d) - Old Age Security Pension, Guaranteed Income Supplement and Spouse's Allowance

Who should mark "Yes" in part (d):
- persons 65 years and over who in 1995 received Old Age Security Pension (and Guaranteed Income Supplement) from the federal government;
- 60- to 64-year-old spouses of Old Age Security Pension recipients and widow(er)s who received Spouse's Allowance from the federal government.

Report only money received from the **federal** government.
Report provincial income supplements in part (g).

Part (e) - Benefits from Canada or Quebec Pension Plan

Report in part (e) benefits received from Canada or Quebec Pension Plan in 1995.
Include:
- retirement pensions;
- survivors' benefits;
- disability pensions;
- orphans' benefits.

Do not include:
- contributions to the plan;
- lump-sum death benefits.

Report retirement pensions of civil servants, RCMP and military personnel in part (i).
Report old age, retirement and war pensions from foreign governments in part (j).

Part (f) - Benefits from Unemployment Insurance

Report in part (f) benefits received in 1995 under the federal Unemployment Insurance (UI) program for unemployment, sickness, maternity, paternity, adoption, work sharing, retraining and benefits to self-employed fishermen.
Report:
- total UI benefits before income tax deductions.

Part (g) - Other income from government sources

Report in part (g) income received from federal, provincial and municipal governments in 1995 and not reported in other parts of Question 47.
Include:
- provincial income supplements to Old Age Security pension recipients;
- provincial payments for rent or lodging expenses for senior citizens;
- workers' compensation benefits;
- veterans' pensions;
- war veterans' allowances;
- pensions to widows and dependants of veterans;
- refunds of Goods and Services Tax (GST);
- provincial tax credits;
- cash benefits for food, fuel and shelter under provincial or municipal social assistance (welfare) programs;
- cash assistance to handicapped and disabled persons;
- payments received from training programs sponsored by the federal and provincial governments;
- regular payments from provincial automobile insurance plans (exclude lump-sum payments);

• NCARP payments for employees in the fishing industry.
Do not include:
• federal Child Tax Benefit and Quebec Family Allowance;
• income tax refunds.

OTHER INCOME

Part (h) – Dividends, interest on bonds, deposits and savings certificates, and other investment income

Include:
• the actual (not the taxable) amount of **dividends** received from Canadian and foreign corporate stocks and mutual funds;
• interest from deposits in banks, trust companies, co-operatives, credit unions and caisses populaires;
• interest on savings certificates, bonds and debentures;
• interest from insurance policies;
• net rents from real estate, including farm land;
• mortgage and loan interest received;
• regular income from an estate or trust fund;
• investment income received from abroad.

Part (i) – Retirement pensions, superannuation and annuities, including those from RRSPs and RRIFs

Who should mark "Yes" in part (i):
• persons who received pension income or survivors' benefits in 1995 from an **employee pension plan** or annuities from a matured registered retirement savings plan (**RRSP**) or a registered retirement income fund (**RRIF**).
Include:
• any income from a pension plan of one or more employers;
• payments received from all annuities, including payments from a matured RRSP in the form of a life annuity, a fixed-term annuity, an RRIF or an income-averaging annuity contract;
• pensions paid to widow(er)s or other relatives of deceased pensioners;
• pensions of retired civil servants, Armed Forces personnel and RCMP officers;
• annuity payments received from the Canadian Government Annuities Fund or an insurance company.
Do not include:
• lump-sum benefits;
• withdrawals from a pension plan or RRSP;
• refunds of overcontributions.
Report severance pay and retirement allowances, and pensions from sources outside Canada, in part (j).

Part (j) – Other money income

Report in part (j) any other regular cash income received in 1995 and not covered in parts (a) to (i).
Include:
• alimony, child support and periodic support from persons not in the household;
• non-refundable scholarships, bursaries, fellowships and research grants;
• severance pay and retirement allowances;
• royalties;

- strike pay;
- wage-loss replacement benefits;
- all income from outside Canada.

Do not include:

- money received from gambling, lotteries, the sale of property or loan repayments;
- federal child tax benefit and Quebec family allowance;
- a cash refund of pension fund contributions;
- lump-sum death benefits or any other one-time lump-sum payment;
- lump-sum inheritance or insurance policy settlements or cash gifts;
- capital gains or losses.

IV. Data Assimilation

Data assimilation is the processing phase during which data from the census questionnaires are processed through preliminary edits, are coded and captured. The process includes the transformation of the questionnaire responses into machine-readable form. The three main components of data assimilation are:

- regional office processing
- head office processing
- automated coding

Specific procedures carried out for the income data have been explained under the appropriate section below. Since automated coding had no impact on the processing of income, its description is omitted.

1. Regional Office Processing (ROP)

ROP operations consisted of the following:

(a) General

All completed questionnaires are received in one of the seven regional processing centres across the country. Here, the following pre-capture (data entry) operations were carried out.

- receipt and logging of information about EAs and monitoring the progress of operations in each EA;
- coding of economic variables;
- sequencing, labelling and batching the EAs to control and monitor the number and types of questionnaires in an EA.

The direct data entry phase of ROP was completed on behalf of Statistics Canada by Revenue Canada - Taxation (RCT). This phase consisted of:

- receipt and logging of the EA boxes received from the pre-capture operation;
- keying of data from the Census questionnaire and EA batch control cards;
- verification of keying accuracy by re-keying and comparison of data from a sample of questionnaires;
- electronic transmission of data from the regional centres to head office and loading of data onto cartridges for delivery to head office.

Finally, the questionnaires, visitation records and other materials were assembled and shipped to head office for further processing.

(b) Income

In the case of income, detailed instructions were given to keyers and their supervisors to resolve reporting situations where responses did not meet specific criteria. The instructions included, for example, the following procedures:

- convert non-annual values (for example, per month) into their annual amounts;
- convert values reported in foreign currencies into Canadian dollar equivalents;
- resolve multiple amounts reported against a single source; and
- resolve cases where a range of values was reported (e.g., $10,000 to $15,000).

If a situation was not covered by the specified procedures, keyers were instructed to "key what they see", while at the same time the regional office sought the advice of subject-matter specialists. The problem was described by the regional staff through a 'technical assistance request form (TARF)'. TARFs were electronically transmitted to head office and a resolution was generally provided the same day. Subsequently, similar reporting situations could then be dealt with in a consistent manner in all regions. In 1996, 154 TARFs were received, 15 of which requested resolution of an income reporting situation.

2. Head Office Processing (HOP)

(a) General

Head office processing is a combination of automated and manual processing designed to carry out structural edits on the census data and to process special enumeration returns.

Head office processing consisted of the following:

- **DA I - Receipt, Registration and Storage**

Visitation records and questionnaires for each enumeration area were received, registered and stored at the head office. Tapes containing respondent data were copied and loaded into the HOP database.

- **DA II - Data Analysis**

Automated structural edits were carried out at the enumeration area, household and person levels, and inconsistencies, such as person count conflicts and household number conflicts, were resolved and corrected through a microcomputer application.

- **DA III - Special Processing**

Special enumeration returns from Canadians living outside Canada and persons aboard merchant, naval and coast-guard vessels were adjusted to include them. In addition, HOP processed coverage study returns such as Reverse Record Check (RRC), Vacancy Check (VC) and Overcoverage Study (OCS).

- **Preliminary population and dwelling counts**

HOP was also responsible for preparation of a data file containing the preliminary and final population and dwelling counts.

(b) Income

For the income questions, certain errors, if left uncorrected, could lead to distortions which could have serious repercussions on the quality and credibility of census income data. For example, a respondent-provided amount of $90,000 in wages and salaries could be entered erroneously with an additional zero, changing the original amount to $900,000. Similarly, an amount of $9,000 in Unemployment Insurance benefits could be erroneously converted to $90,000. A few errors of this magnitude in the first source could quickly add millions of dollars to wage estimates, while similar errors in the second source could lead to ridiculous estimates.

To safeguard against such errors, an on-line editing system was established that checked all amount entries against specified limits. For example, $250,000 was the upper limit for wages and salaries of doctors, lawyers, judges etc., $19,000 for unemployment insurance benefits, and so on. If a reported amount was in excess of the specified limits, the relevant source was highlighted on an electronic display of the income question, along with various individual characteristics (sex, age, education, weeks worked etc.), to assist in validation of the response. In some cases it was also necessary to examine the questionnaire. Responses were then either accepted as reported or modified as required on the database. All responses that had been invalidated during key-entry could only be corrected by consulting the questionnaire. These type of responses consisted largely of alpha-numeric responses and mis-keyed values.

Table 2 shows the upper and lower limits specified for various income sources and the total number of amount responses and the number of responses that fell out of limits. There were 10.4 million amount entries, of which about 70,000, or .7%, were electronically examined. About 57,000 original responses were changed of which 41,000 source amounts were modified.

Changes to Employment Income Sources

The largest number of adjustments to any source was made to wages and salaries. However, considering the very high incidence of this source among income recipients, the proportions of records examined and changed were quite small. The large correction rate for non-farm self-employment income was largely due to mis-reporting of wages and salaries by persons who were self-employed in incorporated companies. Also, in certain instances non-farm self-employment income had been mis-reported as farm self-employment income. Correction of this reporting error affected both sources. It was determined that some of these reporting errors stemmed from the sequence of these questions and the highlighting of the term "Income from self-employment" on the questionnaire. The large correction rate for farm self-employment income, in addition to being affected by mis-reporting of the other self-employment income source, resulted from a cross-edit carried out with Census of Agriculture data. In many cases where farm income was changed, it was also necessary to adjust the reported values (which may have been within our limits) of the spouse or another family member.

Changes to Transfer Payment Sources

The adjustments to various sources of government transfer payments may seem substantial, but most of these result from classification errors in reporting. For example, respondents reporting amounts for Old Age Security (OAS) pension and Guaranteed Income Supplement (GIS) in excess of their 1995 entitlement caused a common error among the transfer payment sources. This over-reporting was often due to one of the following reasons:

- OAS/GIS pension was combined with Canada/Quebec Pension Plan (C/QPP) benefits;
- OAS/GIS pension was combined with provincial income supplements;
- one spouse reported OAS/GIS for both spouses;
- some individuals, under the age of 60, misreported another transfer payment or a retirement pension in this source

Table 2. Income Outliers (Sample Counts), 1996 Census

SOURCE	Limits		Responses with amount	Responses outside limits and examined		Responses changed			
						Total Responses Changed*	Amounts Changed	Percent of Total	Percent of Examined
	Upper	Lower							
	$	$	Number	Number	%	Number	Number	%	%
Wages and salaries	125,000	0	2,518,099	8,856	0.4	7,992	5,685	0.2	64.2
Non-farm self-employment	75,000	-20,000	97,091	3,641	3.8	4,738	4,326	4.5	118.8
Farm self-employment	125,000	-20,000	213,385	2,924	1.4	4,882	4,084	1.9	139.7
OAS/GIS	14,000	0	583,030	7,804	1.3	7,646	6,169	1.1	79.0
C/QPP benefits	15,000	0	599,213	4,478	0.7	5,899	3,278	0.5	73.2
Unemployment Insurance benefits	22,000	0	372,561	3,499	0.9	1,768	1,116	0.3	31.9
Other transfers from governments	20,000	0	985,126	12,981	1.3	7,543	4,645	0.5	35.8
Investment income	60,000	-10,000	916,611	8,996	1.0	3,149	1,979	0.2	22.0
Retirement pensions	50,000	0	398,606	7,986	2.0	3,522	1,938	0.5	24.3
Other money income	30,000	0	218,693	4,142	1.9	2,000	1,602	0.7	38.7
TOTAL INCOME	150,000	-30,000	3,515,553	5,163	0.1	8,276	6,500	0.2	125.9
TOTAL AMOUNT RESPONSES			10,417,968	70,470	0.7	57,415	41,322	0.4	58.6

* Included as changes are modifications to "Yes", "Loss" and "No" cell IDs.

All cases of reporting over $14,000 as OAS/GIS were examined during head office processing and either manually resolved at this stage or left for automated edit and correction later. For example, certain individuals who multiplied their current (May, 1995) OAS/GIS payment by 12, to arrive at their annual amount for 1995, had their over-reporting corrected during automated processing (see Edit and Imputation).

Changes to Other Income Sources

Some of the errors encountered in reporting of investment income related to reporting of multiple amounts. Mis-reporting of entire pension income (OAS and C/QPP and private pension) against retirement pensions or OAS/GIS or C/QPP resulted in corrections to the retirement pension source. Because of its position on the questionnaire, respondents sometimes inadvertently reported total income in the other money income field. This was a frequent cause of error identification for that source. In most of the above cases the questionnaire had to be consulted to rectify or confirm reported amounts.

Upon completion of the updates and corrections required in this processing phase, the income data were then transferred to the next phase in processing, namely, edit and imputation.

V. Edit and Imputation

This section provides a brief description of the procedures followed and systems used during the edit and imputation of census data. The specific procedures followed for the edit and imputation of the income variables is described in detail thereafter.

1. General

In the edit and imputation phase, all errors, discrepancies, inconsistencies and missing answers are identified and corrected (including imputation) by a fully automated series of computer programs. The final set of usable "clean" data (free of invalid, inconsistent and missing responses) is produced, comprising a unique database which provides the most detailed information on Canada's population and its characteristics, ranging from the national to the neighborhood level.

Errors found at this stage can be the result of respondents answering the questions incorrectly or incompletely, or they can be due to errors generated during coding activities and data capture. After errors are detected, values for missing or incomplete entries are imputed. Imputation is done using either a "deterministic" or a "hot deck" method. For deterministic imputation, errors are corrected by inferring the appropriate value from answers to other questions. The "hot deck" approach selects a record that has a number of characteristics in common with the record in error, and imputes the missing information from this "donor" record.

One in every five households, or 20% of the population, received a Form 2B including additional socio-economic questions. To derive estimates for the population, a weighting algorithm was developed. In 1996, weighting of the sample was done by a method known as calibration or regression estimation. Calibration estimation starts with initial weights of approximately 5 and then adjusts them by the smallest of possible amounts needed for agreement between the sample estimates (e.g., number of males, number of persons 15 to 19 years of age) and the actual population counts. Once data are finalized and weights are calculated, final data are transferred to retrieval databases; these databases are used to produce published and custom products.

2. Overview of Income Processing

During this phase of income processing, it was assumed that most respondents completed their census questionnaires (including the income questions) as accurately as possible. This assumption stems partly from Statistics Canada's philosophy of trust in respondents and partly from the nature of census income data. Although there are known relationships between income and some other census variables, these are not simple linear relationships. Furthermore, the time-lag between some of these variables (for example, current occupation or class of worker in May 1996 and income in 1995) does not allow verification of some of the apparent inconsistencies.

The edit and imputation phase of income processing used a system that edited the reported values for selected income sources against specified criteria. It checked for reasonable consistency, on the one hand, among income sources and, on the other, between income and other variables. It also imputed data for non-response cases from an established pool of donor records and, finally, derived new income variables.

The processing system employs a set of highly complex and technical operations. The description in this section has been kept, as much as possible, both brief and non-technical. The order in which the various operations are described has been adopted for ease of reference and does not follow the actual system. Users interested in greater detail may refer to other documents or get in touch with the subject- matter experts at Statistics Canada.

In very broad terms, the entire process consists of the following parts:

(a) Determination of Income Processing Universe

As previously mentioned, no income data was requested from individuals under 15 years, from persons who immigrated to Canada in 1996, or from residents of institutions. For these individuals, any reported income was removed and all sources and total income were set to zero. The income reported by members of Hutterite colonies was also removed because of the known inconsistencies of reporting of income among these colonies. Thus, once any income reported by the individuals described above was 'zeroed out', they were excluded from further processing. The remainder of the records went through the processing stream for income.

(b) Determination of Response to Question on Income Sources

The response status of total income and of each of the sources listed on the questionnaire was classified into four categories.

(c) Determination of Response to Income Question

The response status of each income record as a whole was determined by examining the information provided in total income, income sources and certain related variables. All records were classified into nine categories.

(d) Edit and Assignment of Sources

Information provided for the ten income sources listed on the 1996 Census questionnaire was edited for consistency and for correction or assignment where necessary.

(e) Assignment for Non-response

All records were stratified on the basis of certain important income-related characteristics and divided into "donors" and "recipients" according to their response status. Complete and partial non-response cases were dealt with separately.

(f) Derivation of Final Variables

Once the reported income sources were finalized through edits and assignments, GST credits and child tax benefits were estimated and assigned where appropriate. Total income of each individual was then calculated as a sum of the amounts of its constituent sources. Finally, other related income variables were derived.

3. Edit and Assignment of Individual Income Sources

Many respondents leave an income source blank if they consider that the source is inapplicable to them. For example, young respondents tend to leave sources concerning retirement pensions (public or private) blank. As a first step, therefore, the responses on the questionnaire for individual income sources were examined in combination with the response to total income, and each income source was placed in one of the following four categories:

AMOUNT - Reported an amount (negative in some cases).

PARTIAL - Indicated receipt of income without providing an amount.

ZERO - Gave a clear indication of no income from the source.

BLANK - Left the source blank.

Derived in the above manner, the response rates to the individual sources, other than those of employment income, ranged from 86% to 88%. In the case of wages and salaries, 92% of the individuals in the edit universe responded to the question while for farm and non-farm self-employment income response rates were 85% and 84%, respectively.

Since there is a wide variance in the incomes reported by individuals with similar characteristics, editing of most income sources against specified "standards" is not possible. Therefore, individual sources were edited only for obvious inconsistencies. However, the amounts reported against various sources of government transfer payments were compared with the existing administrative standards and adjustments were made where necessary. These edits of sources were undertaken both initially, and after imputation for non-response, to guard against any inconsistencies introduced as a result of imputation.

(a) Total Income

The information provided by respondents against this item was used as a control during most of the automated processing of income data. The amounts reported as total income were edited in conjunction with the responses provided to the sources of income, as follows:

(i) In all cases where respondents provided amounts for total income and one or more sources of income, the system compared the sum of reported sources and the total income. Just over nine out of ten individuals who reported an amount against total income also provided an amount response to one or more sources of income, and there was no difference between their sum of sources and total income. Because of the non-capture of reported cents, a difference of plus or minus $10 was ignored and the reported total income was replaced by the derived sum of sources.

(ii) If the difference between the sum of their reported sources and their total income was greater than ten dollars, an edit was undertaken to check if the difference equaled their reported wages or income from non-farm self-employment. (Some respondents tended to report their 'gross' earnings in wages and 'net' earnings in self-employment). If so, one of the components was removed.

(iii) In cases where the sum of sources was less than the reported total income, it was assumed that the respondent had missed reporting at least one source of income. Where negative income was reported against one of the sources, the reported total income was replaced by the derived sum of sources, keeping in view the possibility of errors of addition in such cases. The remaining records in this group were separated for assignment of missing sources.

(iv) In all other cases where the respondents reported their total income, they only partially answered for income sources or left them blank. Where only one source was partially responded to or left blank, the reported total income was assigned to the single indicated source. The edit, however, ensured that excessive values were not assigned to government transfer payment sources or that negative total income values were only assigned to a source in which a loss could have been incurred. The remaining records in this group were earmarked for assignment of source data.

Whenever an amount was changed in one of the sources during edit and imputation, the total income field was automatically adjusted.

(b) Wages and Salaries

This is the most important source of income in terms of both incidence and share of total income. Except for two checks, the reported amounts were accepted. First, as already stated above, a check for duplicate reporting of wages and non-farm self-employment income was undertaken, which might have led to the deletion of wages and salaries in certain cases.

Secondly, in cases of obvious mis-reporting of farm and/or non-farm self-employment income against wages, the amount was transferred from the former to the latter source without affecting reported total income.

(c) Net Farm and Non-Farm Self-Employment Income

Other than the impact of editing of total income and wages and salaries, as explained above, no other changes were made to this source during editing.

(d) Old Age Security Pension and Guaranteed Income Supplement

As explained earlier, head office processing dealt with most cases where the reported amount for Old Age Security pension and Guaranteed Income Supplement benefits exceeded $14,000. An analysis of inconsistencies indicated that editing of this field often involved changes to Canada/Quebec Pension Plan and other government transfer payments.

To begin with, the existing amounts in this field were edited, and changed where necessary, as follows:

(i) If the reported amount equaled 12 times the current monthly (May 1996) entitlement, it was changed to the actual 1995 entitlement.

(ii) If the reported amount exceeded the actual OAS/GIS entitlement, the excess was transferred, as appropriate, to either other government income (as a provincial income supplement) or C/QPP benefits, or to both.

(iii) If a respondent reported OAS/GIS income but did not meet the age, marital status and residence requirements, the reported amount was transferred to C/QPP benefits if the respondent was eligible for such benefits. Otherwise, the amount was transferred to other government transfer payments.

(iv) If the editing of C/QPP benefits clearly indicated that a respondent reported the OAS/GIS income against that source, it was transferred to OAS/GIS.

Once all sources had been edited and assignment for non-response was concluded, the entire file was passed through a routine to ensure that Old Age Security and Guaranteed Income Supplement were not assigned to an ineligible individual. Furthermore, while all persons aged 65 years and over in 1995 were entitled to Old Age Security (OAS), the entitlement to the Guaranteed Income Supplement (GIS) was dependent on the respondent's income from other sources in the previous year. In the case of married couples, the amount of GIS depended on the combined income of husband and wife. Also, 60- to 64-year-old spouses of OAS recipients were entitled to a Spouse's Allowance (SPA) and 60- to 64-year-old widow(er)s were entitled to a Widowed Spouse's Allowance (WSPA). Finally, individuals not born in Canada had to fulfil certain residence requirements before becoming entitled to OAS/GIS benefits.

To meet these various conditions, a relatively complex system, which took into account age, immigration status, family status, and individual/spousal income was developed and, on the basis of 1995 administrative entitlements, an OAS/GIS/SPA entitlement was calculated for each individual. If the respondent reported more than this estimated entitlement against OAS/GIS, no action was taken. In all other cases, the calculated amount replaced the existing amount against OAS/GIS.

(e) Canada/Quebec Pension Plan Benefits

There is a wide variety of both the types of C/QPP benefits and recipients, which makes it difficult to do a consistency edit of this source. The benefits stem from the contributions, calculated as a percentage of earnings, made by employed persons during their working lives. In some cases, respondents reported their C/QPP "contributions" rather than their benefits from this source. Where this was so established, the amount was deleted. Furthermore, as already explained, where respondents over the age of 65 in 1995 reported their exact OAS/GIS entitlement against these benefits and reported zero OAS/GIS income, the amount was transferred to OAS/GIS. Similarly, reported amounts against this source by other elderly respondents who were not considered eligible for these benefits or amounts in excess of administrative entitlements were transferred to OAS/GIS to the extent of their entitlement, and any remaining excess to "other government income".

Evaluation of C/QPP benefits in the 1996 Census, after imputation for non-response, indicated that the incidence of these benefits, as compared to administrative data, was significantly lower in the 1996 Census than in the past. Accordingly, a new edit and imputation module was designed to process records with "blank" or "partial" response to the C/QPP question. A hot-deck imputation strategy was adopted that matched recipients with non-recipients on the basis of sex, age, marital status, presence of private retirement pension and disability status. Where appropriate, presence of a university degree was used as an auxiliary matching constraint.

(f) Unemployment Insurance Benefits

Some respondents erroneously reported their unemployment insurance contributions rather than the unemployment insurance benefits received by them. These were removed in a manner similar to the misreported contributions to C/QPP.

Evaluation of income data from earlier Censuses had revealed that the incidence of unemployment insurance benefits was substantially lower than indicated by relevant administrative data. Since the census did not collect information on weeks of unemployment during the reference year, it was not considered feasible to undertake changes to this source during processing. An examination of the reported data on unemployment insurance benefits from the 1991 Census revealed that the situation had not improved and that a significant number of recipients did not report their benefits on the 1991 Census questionnaire. A similar reporting situation existed in the 1996 Census.

On the basis of an analysis of relevant data from different sources, the process to impute these benefits to non-respondents was reviewed and modified. As a first step, a processing universe was established. Excluded from this universe were individuals who:

- were accepted to be without income after assignment for total non-response;
- had worked 49 to 52 weeks in 1995 or who had never worked;
- had worked 40 to 48 weeks in 1995 and were self-employed;
- were overseas;
- were under 20 or over 65 years of age; and
- belonged to a class of worker ineligible for UI benefits.

The remaining individuals were divided into two groups: recipients and non-recipients of UI benefits. Each group was classified into 20 strata on the basis of sex, age, weeks worked and class of worker. Imputation was carried out within each stratum and, where applicable, more detailed categories of age and weeks worked were used as auxiliary matching constraints.

(g) Federal Child Tax Benefits

No information was collected directly from respondents on Federal Child Tax benefits. Since payment of these benefits is dependent on parental 'net income', a complex formula based on income tax statistics was used to derive net income. The Federal Child Tax benefits were then calculated on the basis of the number of eligible children in the family and the derived parental net income, and were assigned to the parent with the higher total income in 1995 (or to the lone parent). Separate procedures were implemented to accommodate the supplementary benefits in Quebec and Alberta.

(h) Other Income from Government Sources

This source of income consists of all transfer payments other than those listed above, received from federal, provincial or municipal governments in 1995, and is suspected of substantial under-reporting. Because of the large number of programs involved and the variety of the criteria for their applicability, it is impossible to undertake a thorough edit of this component.

In 1995, Newfoundland, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, the Yukon and the Northwest Territories provided supplementary benefits to elderly recipients. These provincial income supplements were estimated for each individual based on the diverse eligibility rules used by each province (usually associated with OAS and/or GIS entitlements). If the reported income for "other income from government sources" was higher than the calculated supplement, no action was taken. In all other cases, the calculated entitlement replaced the reported value.

(i) Investment Income and Retirement Pensions

Other than the impact of editing of total income, no specific edit for these sources was undertaken.

(j) Other Money Income

Examination of questionnaires during Head Office Processing revealed that some respondents were inadvertently reporting their total income in the Other Money Income amount field. To avoid doubling of total income an edit was performed to remove other money income and correct total income.

4. Imputation for Income Non-response

To provide for the missing income data, three steps were undertaken. First, all individuals were given a record response code according to the type of their response to income questions. Secondly, all records were divided into "donors" (respondents) and "recipients" (non-respondents) and were, at the same time, classified into a set of homogeneous strata. Finally, "donors" and "recipients" were matched to obtain missing income data.

(a) Record Response Code

All individuals were divided into nine groups, with each given a record response code as follows:

RC1 - These records, by definition, had no income and were not used as donors for the imputation of data to non-respondents.

RC2 - These were respondent records (with zero income) and were part of the donor universe, along with those of income recipients, for non-respondent records whose income status could not be determined (see RC4 below).

RC3 - These were respondent records (with income) and were part of the donor universe for non-respondent records coded RC4; they constituted the entire donor universe for non-respondent records coded RC5 to RC9.

RC4 - These were non-respondent records for persons who may or may not have had income in 1995. These records were assigned complete income data from RC2 and RC3.

RC5 - These were non-respondent records for persons who received an unknown income in 1995. These records were assigned complete income data from RC3 records.

RC6 - These records provided an amount for respondents' total income only. These records were matched with an RC3 record with similar total income for complete assignment of income data.

RC7 - These records provided an amount for total income as well as for some sources but, at the same time, did not give a response for some of the sources. A procedure similar to that for records coded RC6 was adopted, except that the recipient record was assigned data for only those sources which were "partial" or "blank". In other words, an amount already reported against a source was not replaced.

RC8 - These records were similar to those coded RC7, except that information was provided for employment income sources only, but not for total income. These records were treated in the same manner as those coded RC7, except that the matching of non-respondents was undertaken on the basis of reported employment income, rather than total income.

RC9 - These records were without an amount reported in either the three employment income sources or in the overall income total. These were treated in a manner similar to those coded RC5, except that the recipient was assigned data for only those sources that were "partial" or "blank".

Based upon the above classification of records, about 83% of all individuals provided complete income information, 8.2% provided only partial information and 8.1% were completely non-respondent. Table 3 gives a breakdown of individuals by record response codes.

Table 3. Distribution of Population 15 Years and Over by Type of Response to Income, 1996 Census

Record response code	Type of response	Response rate
	Respondents	**83.1**
RC1-2	Without income	8.1
RC3	With income	75.7
	Partial respondents	**8.2**
RC6	Only total income reported, no information on sources	4.0
RC7	Total income reported and sources indicated without amount	1.6
RC8	Employment income reported but total income not reported	1.4
RC9	With income, sources indicated without amounts	1.2
	Non-respondents	**8.1**
RC4	Indeterminate, no information provided	5.2
RC5	With income, no other information	2.8
	Total	**100.0**

(b) Stratification

The income of a non-respondent retired person is, other things being equal, likely to be similar to that of another retired person. Again, two persons aged between 30 to 35 years, with university degrees and working full year full time in 1995, are likely to have similar incomes. It is, therefore, logical to match non-respondents (recipients) and respondents (donors) with as many common characteristics as possible.

Partial respondents (records coded RC6, RC7 and RC8), where total or employment income was given but some source information was missing (and respondent records coded RC3) were divided into three strata: one each for the aboriginal, non-aboriginal and overseas populations. Within each stratum, an attempt was made to further match the donor-recipient pair on the closeness of their given total or employment incomes (seven groups), age (three groups), work activity (worked or did not work in 1995) and class of worker (paid worker/unpaid family worker, non-farm self-employed or farm self-employed).

For complete non-respondents, the operation was much more complex. Both respondents (records coded RC2 and RC3) and complete non-respondents (records coded RC4, RC5 and RC9) were divided into 114 strata on the basis of homogeneity of selected characteristics as follows:

(i) The non-aboriginal population in Canada was stratified into 73 groups based on age (10-year age groups), work activity (weeks worked in 1995), work effort (full-time or part-time), class of worker (paid workers, non-farm self-employed, farm self-employed or unpaid family workers), and census family status (husbands or male lone parents, female lone parents, wives, children, non-family persons and persons in collective dwellings (not processed through family formation);

(ii) The aboriginal population in Canada was stratified into 35 groups based on age (10-year groups), work activity (weeks worked in 1995), work effort (full-time or part-time), class of worker (paid workers, self-employed, all other workers), census family status (husbands or male lone parents, female lone parents, wives, children, non-family persons and persons in collective dwellings) and reserve status (on- or off-reserve);

(iii) The Canadians outside the country were stratified into 6 groups based on age (15-65 and 66 and over), work activity (worked or did not work in 1995) and census family status (husbands or lone parents, wives, children and non-family persons).

To further improve the donor-recipient similarity, each of the 114 strata was divided into smaller groups, where appropriate, on the basis of sex, detailed age groups, education (with or without a university degree), occupation (above- or below-average income occupation) and full- or part-time work.

(c) Imputation

Each non-respondent (recipient) was paired with a respondent (donor) with matching additional characteristics within each stratum. If an exact match could not be found, then the additional matching constraints were relaxed, but imputation was always carried out within the stratum. Once the best match for a recipient was found, the non-respondent was assigned the income sources and total income of the donor record. In the case of non-respondents who initially provided either (a) employment income sources or (b) non-employment sources or (c) total income only, just the missing source information was taken from the donor record.

In all cases of imputation, the processing system ensured that the donor and recipient records were located geographically as close as possible.

5. Derived Income Variables

As a last step in the processing of income, additional income variables, already defined in Section 3 above, were derived. A few points need to be noted:

(a) As stated earlier, the most important of these variables is, of course, 'total income'. In a few cases, the sum of positive and negative incomes from various sources amounted to zero. It was considered important to differentiate these cases from true zero-income records. Accordingly, these records were assigned one dollar in their total income field.

(b) It should be noted that the total income of census families, economic families and households is derived only for persons in private households in Canada.

(c) In addition to (b) above, the income status variable indicating the position of a unit in relation to low income cut-offs does not apply to the population in the Yukon, the Northwest Territories and on Indian reserves.

6. Impact of Edit and Imputation on Income Estimates

As stated at the outset of this section, the objective of edit and imputation was not to 'create' data but to ensure the reasonable accuracy and consistency of the data supplied by the respondents. With this objective in view during each of the many phases of edit and imputation, a record was kept of all changes made to the data. **Table 4** gives the original and the final number of income recipients and the amount received from different income sources.

The table shows the impact of edit and imputation on both the number of recipients and aggregate income from each source. At the end of the process, the number of income recipients had increased by 9.9% and the aggregate amount of income increased by 11.6%. While the proportion of income assigned for most sources is commensurate with the proportion of records imputed, the following points should be kept in mind when examining data in Table 4:

(a) The changes to farm and non-farm self-employment income include those resulting from the edit between class of worker and reported employment income sources, as discussed earlier. Excluding this edit, the number of recipients of net farm income and net non-farm self-employment income increased by 15% and 16%, respectively. The corresponding aggregate amounts increased by 16% and 15%, respectively.

Table 4. Impact of Edit and Imputation on the Number of Income Recipients and Their Aggregate Income (Sample Statistics), by Source of Income, 1996 Census

Source of income	Number of income recipients			Aggregate amount received		
	Original	Final	Change	Original	Final	Change
	'000		%	$'000,000		%
Wages and salaries	2,504	2,876	14.9	66,870	75,150	12.4
Non-farm self-employment	211	260	23.3	4,224	5,068	20.0
Farm self-employment	88	90	2.0	923	830	-10.1
Old Age Security pension and Guaranteed Income Supplement	575	641	11.4	2,888	4,032	39.6
Canada/Quebec Pension Plan benefits	595	779	31.0	2,736	3,575	30.7
Unemployment insurance benefits	370	557	50.3	1,696	2,553	53.5
Child tax benefits	-	729	100.0	-	1,212	100.0
Other income from government sources	976	2,468	152.8	2,707	4,140	53.0
Investment income	912	1060	16.2	4,306	4,987	15.8
Retirement pensions	398	466	17.3	4,588	5,306	15.6
Other money income	215	249	16.0	871	1,031	18.3
Total Income	**3,972**	**4,366**	**9.9**	**96,744**	**107,927**	**11.6**

(b) No information was collected on Federal Child Tax benefits. These were estimated and assigned to those entitled to receive them.

(c) Aggregate Old Age Security pension and Guaranteed Income Supplement benefits increased by nearly 40% during the course of processing. Just over four-fifths of this amount was assigned after imputation for non-response to bring individuals up to administrative entitlement levels, given individual or spousal total income, as explained under "Edit and Assignment of Individual Sources".

(d) The changes to Canada or Quebec Pension Plan benefits for the 1996 Census include the impact of the new procedure to edit and impute benefits to non-respondents separately, as previously explained. Excluding the impact of this procedure, the number of recipients would have increased by 19.5% and the aggregate benefits by 19.4%.

(e) The separate procedure to edit and impute Unemployment Insurance benefits to non-respondents, as explained in the text, accounted for much of the change in these benefits.. Excluding the impact of this procedure, the number of recipients would have increased by 16.9% and the aggregate benefits by 17.9%.

(f) The large proportion of individuals with other income from government sources assigned or imputed is due primarily to two procedures. First, on the basis of age, family status and individual or family income the Goods and Services Tax (GST) credit was calculated. Secondly, on the basis of age and income (individual or family), provincial income supplements were calculated for recipients of Old Age Security pension and Guaranteed Income Supplement. The existing amount (after imputation for non-response) of other government income was then verified for individuals and families to ensure that it equaled at least the sum of the calculated values for GST credit and provincial income supplement. Under-reported amounts were replaced by the calculated values. Since the calculated amounts were relatively small, the change in the number of recipients was much higher than the change in the aggregate amount assigned.

VI. Data Evaluation

1. General

Throughout the census-taking process, care was taken to ensure high-quality results. Rigorous quality standards were set for data collection and processing, and the Public Communications Program assisted in minimizing non-response. A Data Quality Measurement program was established to provide users with information on the quality of census data.

Although considerable effort is made throughout the entire process to ensure high standards of data quality, resulting data are subject to a certain degree of inaccuracy. To assess the usefulness of census data for their purposes and to understand the risk involved in drawing conclusions from, or basing decisions on these data, users should be aware of their inaccuracies and appreciate their origin and composition.

An error can arise at virtually any stage of the census process, from preparation of materials to data collection and processing. Some errors occur at random and tend to cancel each other out when individual responses are aggregated for a large group. For errors of this nature, the larger the group the more accurate the corresponding estimate, and therefore it is important to be cautious when dealing with estimates derived from small population groups. On the other hand, some errors occur more systematically and are more serious for data users than random errors.

For census data in general, the principal types of errors are as follows:

- **Coverage Errors**

Occur when individuals and/or dwellings are missed, incorrectly included, or double-counted.

- **Non-response Errors**

Occur when responses are not available from some households and/or individuals due to extended absence or for other related reasons.

- **Response Errors**

Occur when respondents, or in some instances census representatives, misinterpret a census question and record an incorrect response.

- **Processing Errors**

These errors can occur during **coding**, when write-in responses are transformed into numerical codes by clerks or by the automated coding system during **data capture**, when responses are transferred from questionnaires to computer tapes by key-entry operators. They can also occur during **imputation**, when a valid, but not necessarily correct, response is inserted by the computer into a record to replace missing or invalid data.

- **Sampling Errors**

This type of error only applies to supplementary questions on the long (2B) questionnaire. These questions were asked of only a twenty percent (20%) sample of households, and errors arise due to the fact that sample estimates are weighted to represent the whole population and inevitably differ somewhat from results that would have been obtained had the questions been asked of the total population.

All of the above errors have both random and systematic components. Usually the systematic component of sampling error is very small in relation to the random component. For other non-sampling errors, both random and systematic components may be significant.

Three studies were undertaken to measure coverage errors:

- Vacancy Check
- Reverse Record Check
- Overcoverage Study

Two studies were conducted to evaluate response errors:

- Reverse Record Check Content Study
- Overcoverage Content Study

Four studies were undertaken to evaluate the effect of sampling errors on the sample data:

- Sampling Bias Study
- Weighting Evaluation
- 2A/2B Consistency Study
- Sampling Variance Study

On some Indian reserves and settlements (a total of 77), enumeration was not permitted or was interrupted before its completion, or the quality of collected data was considered to be inaccurate. These areas are called **incompletely enumerated Indian reserves and Indian settlements**. Under these circumstances, data are not available for these areas and are not included in tabulations. Where necessary, explanatory notes have been provided. Caution should be exercised when analyzing data from areas affected by incomplete enumeration, especially in small areas where the impact is the greatest.

2. Data Evaluation and Quality of Income Estimates

Before data are released, an evaluation is undertaken with respect to the quality of Census income estimates. In fact, however, the qualitative aspect of the data is a consideration throughout the processes described earlier in this document. Thus, the editing of amounts against maximum limits during head office processing is carried out towards this end. (See Table 2.) The first step in automatic processing is to determine the nature of the response to income questions. (See Table 3.) Again, during edit and imputation, audit trails are instituted to keep a record of changes made. (See Table 4.)

Once the data have been finalized, an overall evaluation of income estimates is undertaken before release. This evaluation consists of reconciliation of census income statistics with other sources of similar data. The results of two such reconciliations are summarized below.

(a) Census and National Accounts

The final estimates of 1995 income derived from the 1996 Census were evaluated in relation to 1995 personal income estimates in the national accounts. Before the evaluation, however, it was necessary to make adjustments for differences of concepts and coverage in the two sources. For example, personal income estimates include supplementary labour income in wages, but census estimates are for actual wages received. The results of the evaluation are

shown in Table 5.The overall census estimates of aggregate income from comparable sources were just under 95% of similar National Accounts estimates. There was, however, substantial variation in the results of comparisons of individual sources.

The three components comprising employment income were 0.4% larger than the comparable estimates in the National Accounts. This was identical to a similar reconciliation of employment income from the 1991 Census. The comparison of the component sources of employment income did, however, show some variation. Estimates of wages and salaries, the most important source of income, were almost identical, differing by only 0.1% in the two estimates. Aggregate non-farm self-employment income in the Census was 5% lower than National Accounts estimates. Reconciliation between Census estimates of farm income with those in the National Accounts has generally been unsatisfactory in the past, and for 1995, the comparison is also unsatisfactory. Census estimates of farm income are two and one-quarter times higher than similar National Accounts estimates. For this reason it has been recommended that users exercise caution in the use of farm income estimates.

Table 5. Comparison Between Census Income Estimates and Adjusted Personal Income Estimates, Canada, 1995

Source of income	Census income estimates	Personal income estimates	Difference	
			Absolute	Relative
	1	2	3=(1-2) ($ millions)	(3/2)100 %
Wages and salaries	367,746	367,278	468	0.1
Non-farm self-employment	25,098	26,428	-1,330	-5.0
Farm self-employment	4,163	1,839	2,324	126.4
Employment income	397,007	395,545	1,462	0.4
Old Age Security pension	19,228	19,225	3	0.0
Canada/Quebec Pension Plan benefits	17,638	20,124	-2,486	-12.4
Child tax benefits	5,734	5,728	6	0.1
Unemployment insurance benefits	12,106	12,889	-783	-6.1
Other income from government sources	18,822	27,850	-9,028	-32.4
Transfer payments from government	73,528	85,816	-12,288	-14.3
Investment income	25,125	41,593	-16,468	-39.6
Total income	**495,660**	**522,954**	**-27,294**	**-5.2**

Notes: (1) Total income consists of comparable sources in the census and national accounts estimates; it excludes retirement pensions and other money income.

(2) Components may not add to totals due to rounding.

The census estimate of Old Age Security pensions and Child tax benefits were also close to National Accounts estimates, but the aggregates for Unemployment Insurance benefits, Canada/Quebec Pension Plan benefits and other government transfer payments were underestimated to a larger degree. The "other government transfer payments" include income from a very large variety of transfer programs, and the adjustments made to the personal income estimates for conceptual equivalence were only approximate. Furthermore, a

'catch-all' category like 'other' is generally subject to under-estimation. Finally, there was a very large discrepancy between estimates of investment income in the census and in the National Accounts. The underestimation in the census (and the surveys) of this source of income is a common phenomenon in Canada and elsewhere.

(b) Census and Survey of Consumer Finances

Census income statistics were also compared with similar statistics from the Survey of Consumer Finances. An identical income concept is used in the census and the Survey, but there are differences of coverage. The Survey does not cover the population in the Yukon, the Northwest Territories, Indian reserves and outside Canada. Adjustments were made to the census data for these differences before undertaking comparisons with the Survey data.

National and provincial income size distributions of different population groups such as individuals and families were compared from the two sources. Similarly, the incidence of low income among economic families and unattached individuals was compared according to different characteristics. The average incomes of individuals in each province, shown in Table 6, were also compared.

The results of these comparisons indicated a very good reconciliation between the census and Survey income statistics.

Table 6. Percentage Distribution of Individuals 15 Years and Over, Income Recipients and Their Aggregate Income, and Their Average Income, by Province, Census and Survey of Consumer Finances, 1995

Province	Population 15 years and over		Income recipients		Aggregate income		Average income	
	Census %	Survey %	Census %	Survey %	Census %	Survey %	Census $	Survey $
Newfoundland	2.0	1.9	1.9	1.9	1.5	1.4	19,670	19,737
P.E.I.	0.5	0.5	0.5	0.5	0.4	0.4	20,526	20,124
Nova Scotia	3.2	3.2	3.1	3.1	2.7	2.6	21,353	20,854
New Brunswick	2.6	2.6	2.6	2.6	2.1	2.1	20,718	21,065
Quebec	25.3	25.2	24.9	24.8	22.9	22.9	23,201	23,519
Ontario	37.5	37.9	37.7	37.8	40.8	41.0	27,311	27,719
Manitoba	3.7	3.7	3.8	3.7	3.4	3.4	23,016	23,488
Saskatchewan	3.2	3.2	3.3	3.3	3.0	3.1	22,902	23,523
Alberta	9.1	9.0	9.2	9.2	9.2	9.6	26,230	25,273
British Columbia	13.0	12.9	13.1	13.0	13.7	13.9	26,405	27,224
Canada	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**25,231**	**25,518**

VII. Historical Comparability

1. General

To analyze historical trends based on census data, it is important to note the changes which took place from one census to another in respect of content, collection, and processing of data. In the past, the censuses of Canada have undergone continual change to meet the ever-changing needs of Canadians for timely and accurate information on Canada's statistical profile. This versatile perspective continued in 1996.

The following changes were made since the 1991 Census:

- Two (2) housing questions (maintainer and tenure) were moved from the 2A to the 2B questionnaire in 1996;
- Six (6) questions not asked in the 1991 Census appear on the 1996 Census questionnaire for the first time (Aboriginal self-reporting, Population group, Household activities (3 questions) and Mode of transportation);
- Two (2) questions found on the 1991 Census questionnaire were excluded from the 1996 Census questionnaire (Religion and Fertility);
- Form 3B - Soup Kitchen Questionnaire was eliminated.

Form 2D was once again used to enumerate remote northern areas, Indian reserves, usual residents in institutions and residents of a Hutterite colony. It contained the same questions as the Form 2B, but was set up to be administered in a person-to-person environment.

As was the case in the 1991 Census, both **permanent and non-permanent residents** of Canada were enumerated in 1996. Users should be careful when comparing data from 1991 and 1996 to those from earlier censuses.

2. Historical Comparability of Income Data

(a) Content and Coverage

The Canadian censuses have a long tradition of collecting some income data. A question on wages and salaries has been asked in every census taken in the present century. However, prior to 1961, census income data were limited to wages and salaries, and no information was collected on income from any other source such as self-employment, investments, retirement pensions, or government transfer payments.

The 1961 Census collected, for the first time, information on total income by source of income, i.e. both earnings from employment and other income. However, the 1961 Census did not ask a question on income from farming. Moreover, for income purposes, the coverage in the 1961 Census was restricted to a sample of non-farm private households and excluded households in the Northwest Territories. The income reference period in the 1961 Census covered the 12 months immediately preceding the census or, if income information could not be provided for that time period, the previous calendar year, i.e. 1960.

The 1971 Census was the first to collect, from a sample of all households, complete information on income from all sources during the previous calendar year. The total income concept was identical in the 1981, 1986, 1991 and 1996 Censuses, although there were differences in the

number and combination of questions asked on the sources of income. These later censuses, however, excluded the institutional population.

Thus, in terms of content, coverage and reference period, income data from the 1961 and earlier censuses are generally not comparable to data from the 1971, 1981, 1986, 1991 and 1996 Censuses. Income data from the 1971 Census can be compared to those from the later censuses after adjustments for coverage have been made. While the 1981, 1986, 1991 and 1996 Censuses are identical in terms of income content, the 1991 and 1996 Censuses differ slightly from previous censuses in terms of coverage. Persons in Canada on student authorizations, employment authorizations, and Minister's permits, and as refugee claimants, were enumerated in the 1991 and 1996 Censuses but not in previous censuses. These persons, as noted earlier, are referred to as **non-permanent residents**.

Figure 4 provides the relevant details about income sources, reference period, etc., for the 1971, 1981, 1986, 1991 and 1996 Censuses.

Figure 4. Income Content and Coverage in the Censuses of Canada

	Census				
	1971	**1981**	**1986**	**1991**	**1996**
Sources					
Wages and salaries	Yes	Yes	Yes	Yes	Yes
Net non-farm self-employment	Yes	Yes	Yes	Yes	Yes
Net farm self-employment	Yes	Yes	Yes	Yes	Yes
Family allowances	Yes	Yes	Yes	Yes	Yes
Federal child tax benefits	No	No	Yes	Yes	Yes
Old Age Security (OAS) and Guaranteed Income Sup. (GIS)	Yes[1]	Yes[2]	Yes	Yes	Yes
Benefits from Canada/Quebec Pension Plan (C/QPP)	Yes[1]	Yes[2]	Yes	Yes	Yes
Benefits from unemployment insurance	Yes[1]	Yes	Yes	Yes	Yes
Other income from government sources	Yes	Yes	Yes	Yes	Yes
Interest and dividends	Yes	Yes[4]	Yes[4]	Yes[4]	Yes[4]
Other investment income	Yes	Yes[4]	Yes[4]	Yes[4]	Yes[4]
Retirement pensions, superannuation, annuities	Yes	Yes[5]	Yes	Yes	Yes
Other money income	Yes	Yes[5]	Yes	Yes	Yes
Reference Period	1970	1980	1985	1990	1995
Sample Size	33%	20%	20%	20%	20%
Coverage	All	[6]	[6]	[7]	[7]

[1] OAS, GIS and C/QPP benefits and provincial old age assistance were collected as a single source.
[2] OAS, GIS and C/QPP benefits were collected as a single source, but provincial income supplements are included in "Other income from government sources".
[3] Included in "Other income from government sources".
[4] Includes all investment income as a single source.
[5] Included with "Other money income".
[6] Excludes institutional population.
[7] Excludes institutional population; includes non-permanent residents.

(b) Current Versus Constant Dollars

The average income of a family in 1980 was $26,700; it increased to $37,800 in 1985, to $51,342 in 1990 and to $54,583 in 1995. Thus, family income increased by 42% between 1980 and 1985, by 36% between 1985 and 1990 and by 6% between 1990 and 1995. However, the value of the dollar also changed during this period. When the changes in the purchasing power of a dollar, as measured by changes in the Consumer Price Index (CPI), are taken into account, family income declined by about 1% between 1980 and 1985, increased by 9% between 1985 and 1990 and then dropped by almost 5% between 1990 and 1995. It is, therefore, important to take this factor into account when comparing incomes over time. One method to do so is to adjust incomes, as illustrated above, by changes in the CPI over the periods.

VIII. Products and Services

The national census is an extremely rich source of data on many aspects of Canadian life. These data are a major input towards many important business and policy decisions. These data are used in the analysis of a variety of demographic, social and economic phenomena. However, it is not always possible, at least in terms of cost, for every user to obtain made-to-measure data. Keeping this difficulty in view, Statistics Canada places in the public domain a series of products for use by Canadians. These products consist of both hard copy publications as well as machine-readable material.

The census results are published in a set of data and analytical series. Income is one of the most important variables, and occupies a significant part of these series. Furthermore, income data are often included even in publications on subjects other than income. While it is not possible, due to space limitations, to list the complete contents of these publications, this section provides a summary of the available data on income.

1. Nation Series

This series provides national coverage. Generally, the data are presented for Canada, provinces, territories and census metropolitan areas. In some tables comparable data from earlier censuses are included. In response to customer requests, all of the Nation series tables were published electronically and are available on CD-ROM. Data were made available at the time of the 12 major data releases from the Census of Population. At each release, abstracts of the Nation series tables were provided on the internet and can be obtained free of charge at Statistics Canada's Web site (**http://www.statcan.ca**.).

The contents of the 10 income data tables in the Nation Series are summarized below:

The tables provide selected income statistics for individuals, families and households for 1990 and 1995 in constant (1995) dollars. Included are tables presenting 1990 and 1995 income size distributions of total income, employment income and wages and salaries for population 15 years and over by sex, age, work activity and highest level of schooling. One table provides average employment income in constant (1995) dollars in 1990 and 1995 for population 15 years and over by sex, work activity and detailed occupation. The statistics in this table are presented separately for all persons with employment income and for those who worked full year, full time. Census family and household income size distributions for 1990 and 1995 are provided by family structure, combination of employment income recipients (earners), household type and size. Also released is one table providing statistics on the incidence of low income in 1990 and 1995 among economic families, unattached individuals and the population. All tables provide data for Canada, provinces, territories and census metropolitan areas. The tables are contained in Standard Data Products - The Nation Series, Catalogue No. 93F0029XDB9600, Sources of Income, Earnings and Total Income, Family and Household Income.

2. Area Profile Series

The Area Profile Series presents data on a wide range of census variables for a variety of sub-provincial areas. This series is composed of two parts. Part A provides basic demographic, housing and family characteristics, while Part B presents social, cultural, labour and income data. The series contains a large number of electronic and print publications, grouped by geographic areas as follows:

(a) **Census Divisions and Subdivisions**, Catalogue Nos. 95F0181XDB**96001** to **96013**

In print, Catalogue Nos. 95-182-XPB to 95-193-XPB

(b) **Federal Electoral Districts (1996 Representation Order)**, Catalogue No. 95F0180XDB

(c) **Census Metropolitan Areas and Census Agglomerations**, Catalogue No. 95F0182XDB

(d) **Enumeration Areas (EAs)**, Catalogue Nos. 95F0185XDB**96001** to **96013**

(e) **Forward Sortation Areas (FSAs)**, Catalogue No. 95F0184XDB

(f) **Census Tracts**, Catalogue Nos. 950183XDB**96001** to **96043**

In print, Catalogue Nos. 95-194-XPB to 95-214-XPB

Included in Part B of the electronic tables for each geographic area are data on the following: income size distributions of individuals by sex, all census families and husband-wife census families, non-family persons by sex and private households by size; average family income by census family structure; average employment income by sex of full-year, full-time, part-year/part-time and all workers; incidence of low income among economic families, unattached individuals and the population in private households; and the composition of income in each area. These data, with slightly less detail, are also available in the print versions of the Census Division and Sub-divisions and Census Tracts profiles.

3. Public Use Microdata Files

Another important product from the 1996 Census consists of microdata files. As was stated in Section IV, the detailed census questionnaire (2B) was given to a 20% sample of all households. The microdata files take a subsample of 2B households and place them in the public domain. To ensure and preserve the confidentiality of the data, the level of detail on certain variables, available on the main census database, could not be placed on these files.

These files contain a wide range of data on the population of Canada, the provinces, and most metropolitan areas. These microdata files are unique among census products, since they allow the users to return to the database unit of the census, enabling them to group data to suit their own requirements. As a result, the files are a powerful analytical and research tool.

The following three microdata files from the 1996 Census are available:

(a) Households and Housing File

The household microdata file does not show information on all sources of income. Instead, these sources are grouped into household employment income, government transfer payments, investment income and other income. In addition, the file contains data on total household income, major source of household income, number of employment income recipients, and number of income recipients in the household. The file also contains data on most of these variables in respect of the household maintainer and his/her spouse and economic family.

Available in Flat ASCII File (95M0015XCB) or in Beyond 2020™ (95M0011XCB) on CD-ROM.

(b) Family File

The family microdata file shows information on most sources of income. The sources are grouped, for each census family and non-family person, into wages and salaries, self-employment income, child tax benefits, Old Age Security pensions and Guaranteed Income Supplements, Canada or Quebec Pension Plan benefits, Unemployment Insurance benefits, other income from government sources, total government transfer payments, investment income, retirement pensions and other money income. In addition, the file contains data on total income, major source of family income, number of employment income recipients,

number of income recipients in the family, and family income status. The file also contains data on most of these variables in respect of husbands, wives and lone parents.

Available in Flat ASCII File and in Beyond 2020™ (95M0012XCB) on CD-ROM.

(c) Individual File

The individual micro-data file contains information on all sources of income, except for non-farm self-employment income and farm self-employment income, which have been combined into one component. In addition, data on total income, major source of income, income status, major source of income of each individual's census family, and total income size group of the individual's census family and household are present in this file.

Available in Flat ASCII File (95M0013XCB) or in Beyond 2020™ (95M0010XCB) on CD-ROM.

For details on sampling, content, etc., consult the '**User Documentation**' included with each file.

4. Basic Summary Tables

These data are produced to meet the needs of users who wish to study the characteristics of small areas. Tables provide information on a variety of census variables and are produced for five geographic levels: (i) Canada, Provinces, Territories, census subdivisions (municipalities) and census divisions (counties); (ii) census metropolitan areas, tracted census agglomerations and census tracts; (iii) Canada, Provinces, Territories, federal electoral districts (1987 representation order) and enumeration areas; (iv) Canada, Provinces, Territories, federal electoral districts (1996 representation order); (v) Canada, Provinces, Territories and forward sortation areas.

There are four income tables in this set which provide (i) the number, average income and standard error of average income of the population 15 years and over by sex and age groups; (ii) the number, average earnings and standard error of average earnings of the population 15 years and over by sex and age groups; (iii) the number, average and standard error of average family income for all census families and husband-wife families and (iv) the number, average and standard error of average household income for private households by size.

These basic summary tables are available in Catalogue Nos. 95F0247XDB**96001** to **96005** for the income table described in (i) above, Catalogue Nos. 95F0248XDB**96001** to **96005** for (ii), Catalogue Nos. 95F0249XDB**96001** to **96005** for (iii) and Catalogue Nos. 95F0250XDB**96001** to **96005** for (iv).

5. Other Related Products

As was mentioned earlier, most analysis of socio-economic characteristics include some income data. In addition, the analysts in the Income Statistics Division undertake income analyses which are published as articles in Statistics Canada's quarterly journals **Perspectives on Labour and Income** and **Social Trends**, or as individual papers in the Division's **Staff Reports** and **Analytical Reports.** User of census income data should also be aware of two other products:

(a) Census Reference Products

The **1996 Census Handbook**, Catalogue Nos. 92-352E and 92-352F, provides an overview by drawing together, in a compact format, all aspects of the census from historical background to development of questionnaires, processing of the data, final data, various products, etc.

The users will find the **1996 Census Dictionary**, Catalogue Nos. 92-351E and 92-351F, of assistance in understanding and interpreting the census data and geographic concepts. The **Dictionary** provides a range of definitions for all variables and terms used in 1996 Census data products.

The **1996 Census Catalogue**, Catalogue Nos. 92-350-UIE (1996 Census Catalogue - Final Edition available electronically from the Statcan website) or 92-350-UPE and 92-3550-UPF (1996 Census Catalogue - Final Edition, print version), provide a complete inventory of the products and services available from the 1996 Census.

(b) Survey of Consumer Finances

Users of census income data may also know that information on incomes is also collected through the annual Survey of Consumer Finances. Although the Survey does not cover the population in the Yukon and the Northwest Territories and certain other small segments of the population, the Survey and the census use an identical income concept. The survey, however, was discontinued in 1998 (see (c) below).

Users should take note of annual income reports from the Survey: **Income Distributions by Size in Canada**, Catalogue No. 13-207, **Family Incomes, Census Families**, Catalogue No. 13-208, **Income After Tax Distributions by Size in Canada**, Catalogue No. 13-210, **Earnings of Men and Women**, Catalogue No. 13-217, **Low Income Persons**, Catalogue 13-569 and **Low Income After Tax**, Catalogue 13-592.

(c) Survey of Labour and Income Dynamics (SLID)

Commencing with the 1998 income statistics, the Survey of Labour and Income Dynamics (SLID) will produce the annual cross-sectional income estimates, in addition to producing longitudinal income data.

IX. Conclusion

This document is a brief guide to users of census income data and provides a general description of the various facets of the 1996 Census, especially those related to income. The concept of income and the processing of income data collected in a survey are quite complex. For example, the automated editing and processing of income data is conducted using hundreds of decision tables embodying logical relationships, conditions and actions. At the same time, a detailed procedure is devised and maintained to audit and monitor the impact of various actions. Such details cannot be included in this report, which is intended to provide an overview only. Users are welcome to contact the following officers in the Census Income Statistics Section for further information on any aspect of income data from the census:

- John Gartley (613) 951-6906
- Alain Crégheur (613) 951-5698